

# Solar DG Rates Overview

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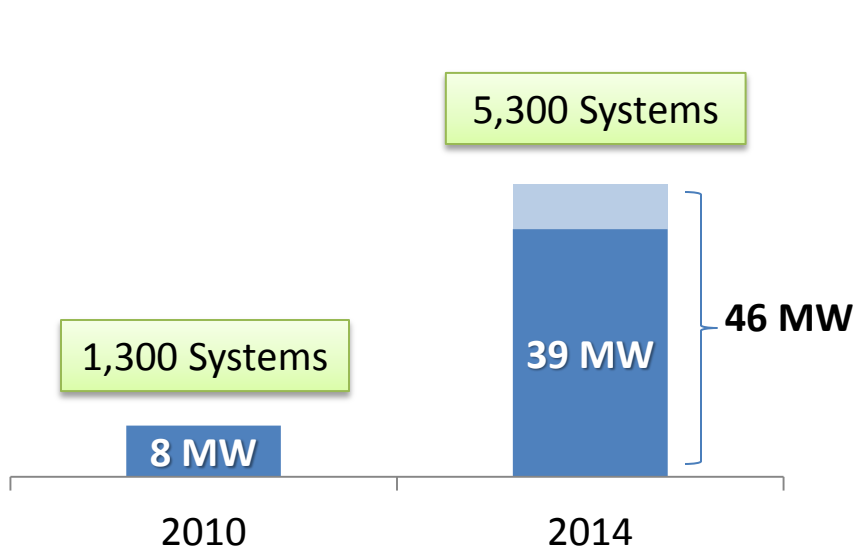
Senior Director, Wholesale, Fuels  
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June 20, 2014

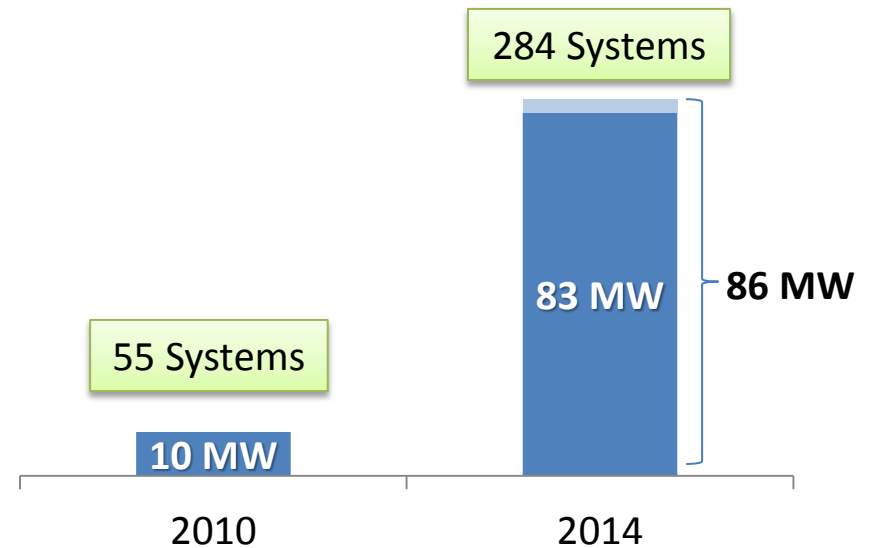


# TEP Solar DG Penetration Continues to Increase

## Residential



## Commercial



- Installed and Reserved Capacity
- Jun-Dec 2014 Expected Capacity Reservations

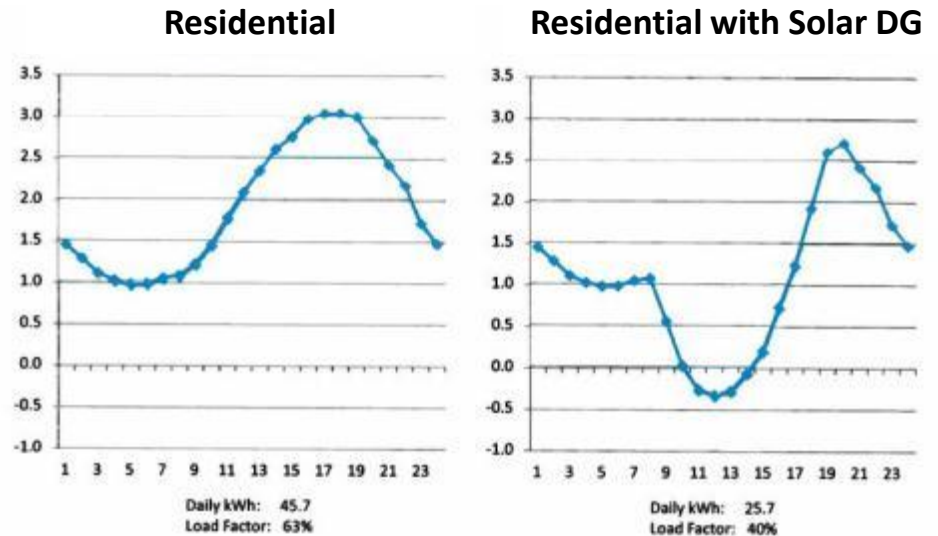
# Challenges of Increasing DG Penetration

- Solar DG production not aligned with customers' usage
- Solar DG production not coincident with system peak
  - Applies to all solar, but more pronounced with fixed DG
- Existing rate designs lack appropriate price signals and shift costs to customers without solar DG



# DG Users Have Unique Load Profiles

- Solar DG users use little or no grid power at midday but quickly ramp up demand on peak, when PV production wanes
- Utilities must be prepared to serve full load on days when PV isn't performing



Source: PacifiCorp

- Ramping up resources quickly to address the typical “needle” peak created by solar DG users creates new issues for utilities.
- This load profile requires different services and resources from the utility

# Actual DG Customer Usage vs. DG Production

## June 9, 2014



NOW  
GENERATING: 1.8 kW

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63 kWh

SOLAR  
GENERATED

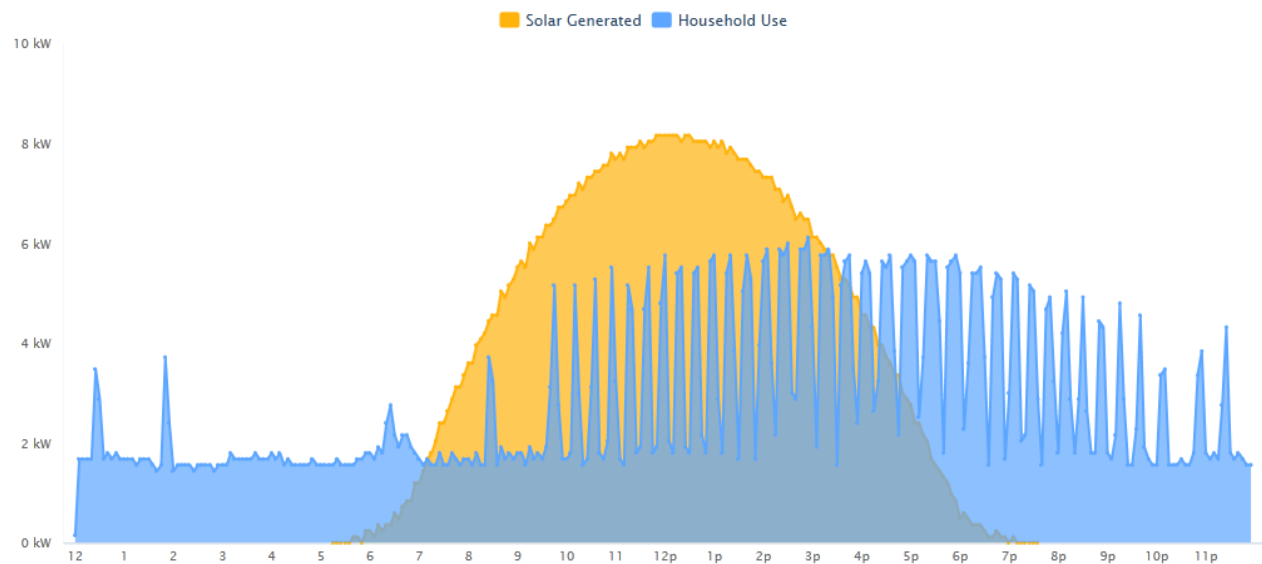
6 kWh

ENERGY FROM  
GRID

69 kWh

ENERGY USED

POWER OVER TIME



“Energy from grid” data understates the customer’s around-the-clock use of grid power.

# Actual DG Customer Usage vs. DG Production

## June 10, 2014

 NOW  
GENERATING: **1.8 kW**

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**61 kWh**

SOLAR  
GENERATED

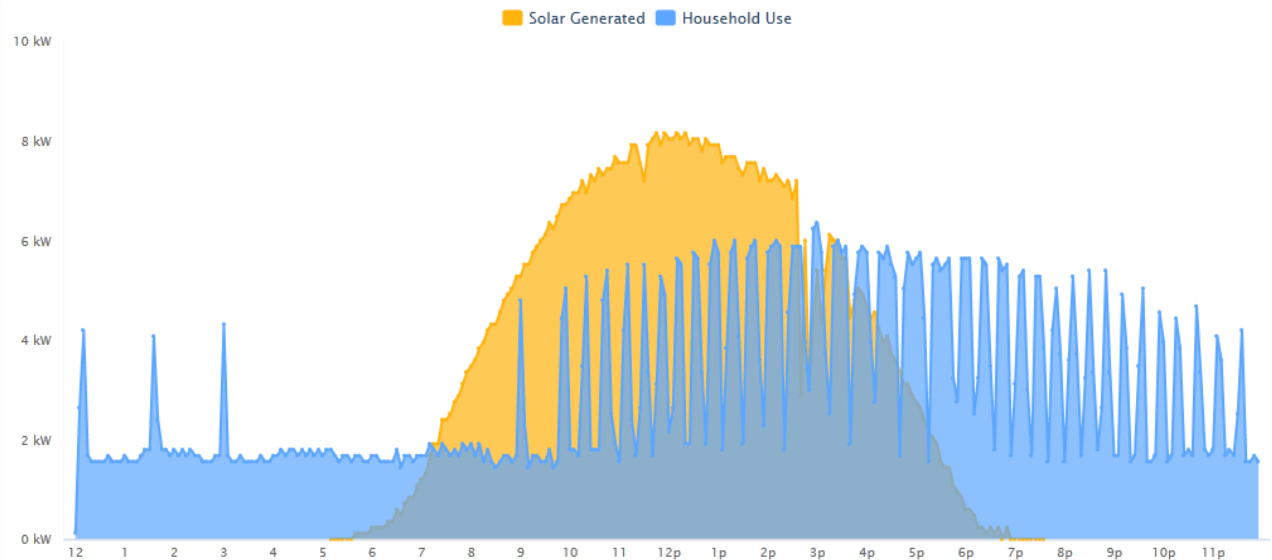
**11 kWh**

ENERGY FROM  
GRID

**72 kWh**

ENERGY USED

POWER OVER TIME



“Energy from grid” data understates the customer’s around-the-clock use of grid power.

# Actual DG Customer Usage vs. DG Production

## June 11, 2014

 NOW  
GENERATING: **1.8 kW**

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**51 kWh**

SOLAR  
GENERATED

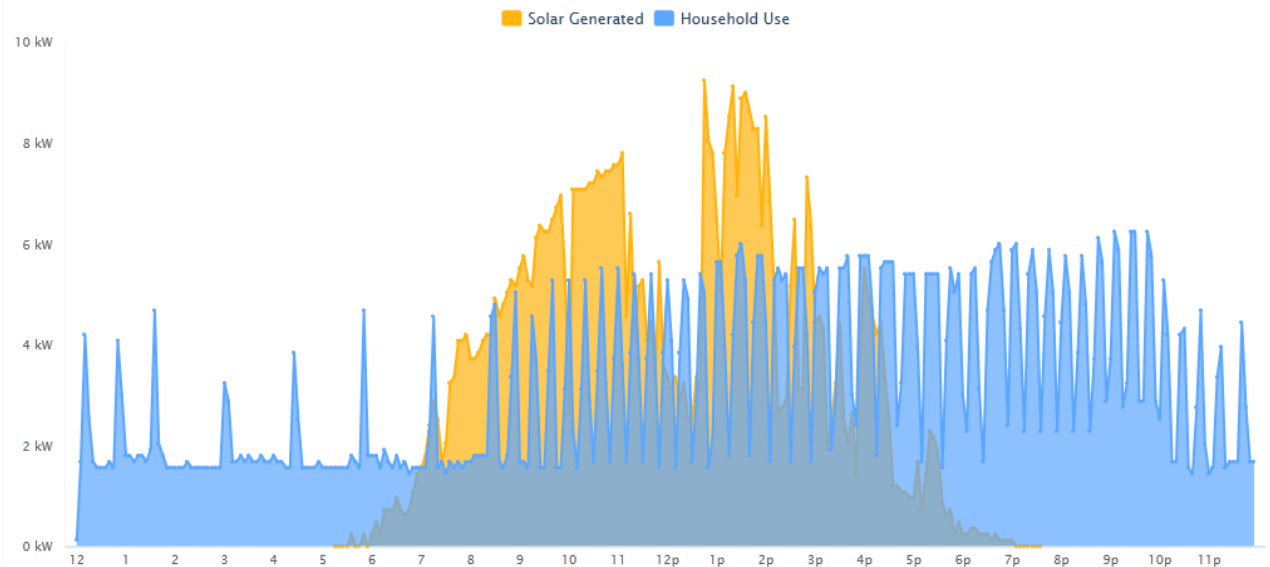
**26 kWh**

ENERGY FROM  
GRID

**77 kWh**

ENERGY USED

POWER OVER TIME



“Energy from grid” data understates the customer’s around-the-clock use of grid power.

# Actual DG Customer Usage vs. DG Production

## June 12, 2014

NOW  
GENERATING: 1.8 kW

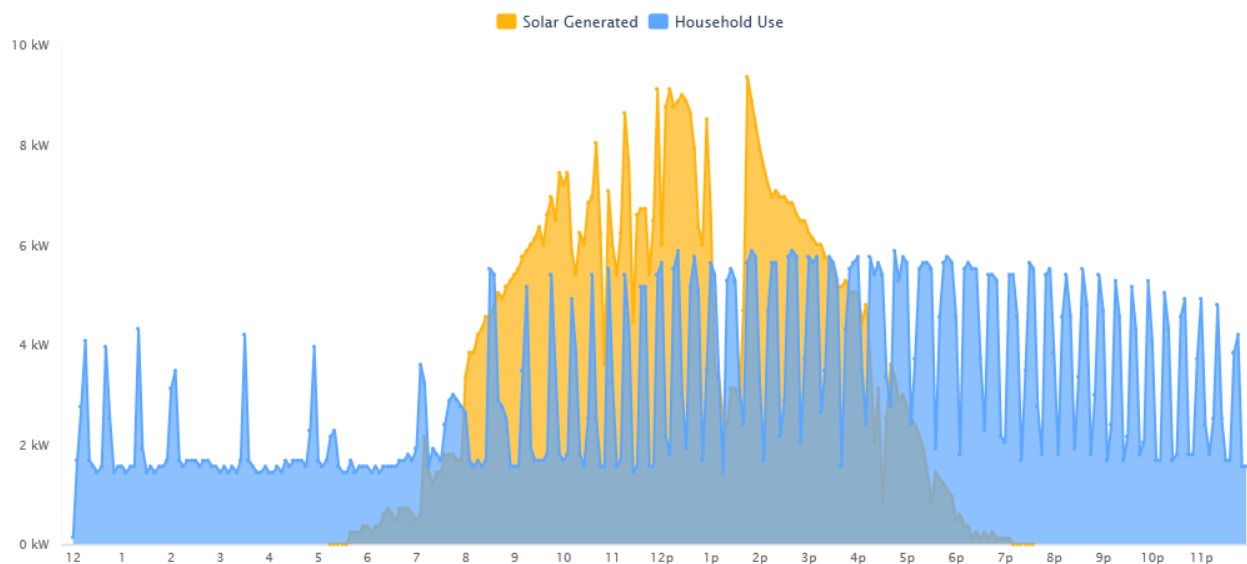
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57 kWh  
SOLAR  
GENERATED

18 kWh  
ENERGY FROM  
GRID

75 kWh  
ENERGY USED

POWER OVER TIME



“Energy from grid” data understates the customer’s around-the-clock use of grid power.

# Actual DG Customer Usage vs. DG Production

## June 13, 2014

NOW  
GENERATING: 1.8 kW

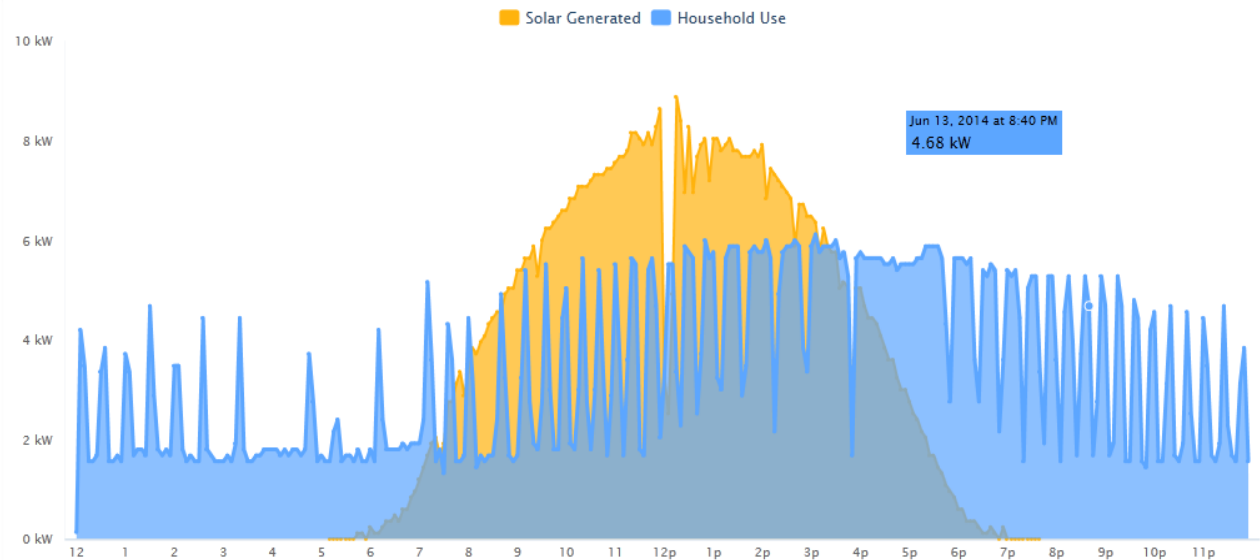
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61 kWh  
SOLAR  
GENERATED

21 kWh  
ENERGY FROM  
GRID

82 kWh  
ENERGY USED

POWER OVER TIME



“Energy from grid” data understates the customer’s around-the-clock use of grid power.

# TEP System Load vs. Solar DG Production Full-Year 2013

VIDEO

# Solar DG Customer Usage vs. DG Production Full-Year 2013

VIDEO

# “Hybrid” Customers

- Current residential rates were not designed to address the unique generation and system usage characteristics of customers with solar DG systems
- Utilities should establish a separate rate class for such “hybrid” customers to address their unique characteristics
  - Reflect true service costs (address banking and net metering)
  - Incentivize economic decisions benefiting the system



# “Hybrid” Rates for “Hybrid” Customers



- New “hybrid” customer rate design
  - Transparent and reflect actual costs
  - Recovery of system infrastructure, operating & energy costs
  - Incentivize economic decisions benefiting the system (time-of-use pricing)
- Address integration of other emerging technologies (fuel cells, batteries)
- Develop new service/billing terminology to reflect the unique services “hybrid” DG customers receive from the utility grid
- If the Commission approves a new policy to recognize societal or other non-cost based benefits, they should be calculated separately from cost-based charges and applied equally to all customers

# Solar DG Rate Design Principles

- Customer-focused
  - New rate structures to accommodate growing DG usage
- Forward-thinking
  - Rate design adapted to new technologies and customers' changing use of utility infrastructure and system operations
- Affordable and Fair
  - Rates should accurately and transparently reflect the cost of services and products that customers use and provide

